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EXAMINER

ZHENG, LOIS L

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/743,387	<b>Applicant(s)</b> MATSUKAWA ET AL.	
	<b>Examiner</b> LOIS ZHENG	<b>Art Unit</b> 1733	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 29-31,34-36,39 and 44-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-31,34-36,39 and 44-48 is/are rejected.
- 7) ☒ Claim(s) 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/21/2010</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3 September 2010 has been entered.

### ***Status of Claims***

2. No claim amendments are made in view of applicant's response filed 3 September 2010. Therefore, claims 29-31, 34-36, 39 and 44-48 are currently under examination.

### ***Terminal Disclaimer***

3. The terminal disclaimer filed on 3 September 2010 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 7,250,193 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Objections***

4. Claim 48 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Art Unit: 1733

5. Claim 48 recites "the metal base material comprises a plurality of metal materials selected from iron material, aluminum material and zinc material", which is interpreted that the scope of claimed metal base material may not include iron material. However, claim 48 depends on claim 29, which recites "said metal base material comprises at least iron based material". Claim 29 requires that the metal base material to contain at least some iron. Therefore, the scope of claim 48 is broader than the scope of claim 29 with respect to the claimed metal base material. Claim 28 does not further limit the scope of claim 29.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**7. Claims 29-31, 34-36, 39 and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-240295(JP'295) in view of Shimakura et al. US 2001/0037748 A1(Shimakura), and further in view of Nagashima et al. US 6,180,177 B1 (Nagashima).**

JP'295 teaches a process for coating an automobile part by electrodeposition wherein the automobile part is pretreated in with a corrosion inhibiting coating, and without drying, directed treated with an electrodeposition coating. JP'295 further teaches that the automobile part is a steel sheet(translation: page 3 lines 8-19).

However, JP'295 does not explicitly teach that corrosion inhibiting coating comprises the chemical conversion coating composition as claimed with claimed pH.

Shimakura teaches a process for treating a metal surface with a conversion coating solution comprising a silane coupling agent, such as  $\gamma$ -aminopropyltrimethoxy silane or N- $\beta$ -(aminoethyl)  $\gamma$ -aminopropyltrimethoxy silane (paragraph [0014]), in an amount of 0.5-100g/l, a fluoride compound of Zr/Ti in an amount of 0.01-50g/l, and persulfates (abstract, paragraphs [0021, 0024]). Shimakura additionally teaches that's coating process leads to formation of zirconium oxide on the metal surface (paragraph [0040]).

Nagashima teaches an aminosilane coupling agent and Zr/Ti fluoride containing conversion coating solution having a pH ranging from 2.0 to 6.5 (col. 7 lines 27-44).

Regarding claims 29-31, 34-36, 39 and 47-48, it would have been obvious to one of ordinary skill in the art to have incorporated the conversion coating solution of Shimakura into the pretreatment step of JP'295 in order to achieve high corrosion resistance and processability as taught by Shimakura (paragraph [0004]). It would also have been obvious to one of ordinary skill in the art to have incorporated a pH of 2.0-6.5 as taught by Nagashima into the conversion coating solution of JP'295 in view of Shimakura in order to ensure formation of high corrosion resistant coating film without precipitate or deposition of water soluble polymer as taught by Nagashima (col. 7 lines 35-44).

In addition, the concentration ranges of the silane coupling agent and the Zr/Ti compound as taught by JP'295 in view of Shimakura and Nagashima overlap the

Art Unit: 1733

claimed silane coupling agent and Zr/Ti compound concentration ranges. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed silane coupling agent and Zr/Ti compound concentration ranges from the disclosed ranges of JP'295 in view of Shimakura and Nagashima would have been obvious to one skilled in the art since JP'295 in view of Shimakura and Nagashima teach the same utilities in their disclosed silane coupling agent and Zr/Ti compound concentration ranges.

Furthermore, since the JP'295 in view of Shimakura and Nagashima teach the same conversion coating step utilizing substantially the same coating solution as claimed, the examiner concludes that the conversion coating formed by the process of JP'295 in view of Shimakura and Nagashima is formed via deposition of hydroxide or oxide of Zr/Ti as claimed.

Furthermore, even though JP'295 in view of Shimakura and Nagashima do not explicitly teach the claimed washing of the conversion coated metal base material with ion exchange water prior to electrodeposition, one of ordinary skill in the art would have found it obvious to have washed the conversion coated surface of JP'295 in view of Shimakura and Nagashima with water such as the claimed ion exchange water, in order to remove excess coating material without introducing impurities.

Regarding claims 44-46, Nagashima further teaches that its aminosilane coupling agent and Zr/Ti fluoride containing conversion coating solution also comprises metal ions such as Zn, Mg and Al (abstract). Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated metal ions such as Zn, Mg and Al as taught

Art Unit: 1733

by Nagashima into the conversion coating solution of JP'295 in view of Shimakura in order to further improve corrosion resistance as taught by Nagashima(col. 4 lines 51-61).

**8. Claims 29, 31, 34-36, 39 and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'295 in view of Nagashima.**

JP'295 teaches a process for coating an automobile part by electrodeposition wherein the automobile part is pretreated in with a corrosion inhibiting coating, and without drying, directed treated with an electrodeposition coating. JP'295 further teaches that the automobile part is a steel sheet(translation: page 3 lines 8-19).

However, JP'295 does not explicitly teach that corrosion inhibiting coating comprises the chemical conversion coating composition as claimed.

Nagashima teaches a process for treating a metal surface with a conversion coating solution comprising a silane coupling agent, a fluoride compound of Zr/Ti, and metal ions such as Zr, Mg and Al(col. 4 lines 42-61, col. 5 lines 5-10 and 5-39). Nagashima further teaches that suitable silane coupling agent includes N-(aminoethyl) 3-aminopropyltrimethoxy silane (col. 5 lines 37-38). The pH of the conversion coating solution as taught by Nagashima is in a range of 2.0-6.5(col. 7 lines 37-44).

Regarding claims 29, 31, 34, 44-48, it would have been obvious to one of ordinary skill in the art to have incorporated the conversion coating solution of Nagashima into the pretreatment step of JP'295 in order to achieve high corrosion resistance and adhesion as taught by Nagashima(col. 2 lines 21-31).

In addition, since the JP'295 in view of Nagashima teach the same conversion coating step utilizing substantially the same coating solution as claimed, the examiner concludes that the conversion coating formed by the process of JP'295 in view of Nagashima is formed via deposition of hydroxide or oxide of Zr/Ti as claimed.

Furthermore, even though JP'295 in view of Nagashima do not explicitly teach the claimed washing of the conversion coated metal base material with ion exchange water prior to electrodeposition, one of ordinary skill in the art would have found it obvious to have washed the conversion coated surface of JP'295 in view of Nagashima with water such as the claimed ion exchange water, in order to remove excess coating material without introducing impurities.

Regarding claims 35-36 and 39, Nagashima further teaches that the concentration of the Zr/Ti compound is 0.1-15wt%, which overlaps the claimed Zr/Ti compound concentration range. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed Zr/Ti compound concentration range from the disclosed ranges of JP'295 in view of Nagashima would have been obvious to one skilled in the art since JP'295 in view of Nagashima teach the same utilities in their disclosed Zr/Ti compound concentration range.

**9. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'295 in view of Nagashima, and further in view of Shimakura.**

The teachings of JP'295 in view of Nagashima are discussed in section 8 above. However, JP'295 in view of Nagashima do not explicitly teach the claimed accelerator in the conversion coating solution.



Shimakura teaches an aminosilane coupling agent and Zr/Ti fluoride containing conversion coating solution that further comprises persulfates since persulfates contributes to corrosion resistance(paragraphs [0021, 0024]).

Regarding claim 30, it would have been obvious to one of ordinary skill in the art to have incorporated persulfates as taught by Shimakura into the conversion coating solution of JP'295 in view of Nagashima in order to further improve corrosion resistance as taught by Shimakura.

**10. Claims 32-33, 37-38 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'295 in view of Nagashima, and further in view of JP 59-064781 (JP'781).**

The teachings of JP'295 in view of Nagashima are discussed in section 8 above. However, JP'295 in view of Nagashima do not explicitly teach the claimed aminosilane coupling agent concentration.

JP'781 teaches an aminosilane coupling agent and Zr/Ti fluoride containing conversion coating solution, wherein the aminosilane coupling agent is present in an amount of 0.5-100g/l(translation: page 6 lines 10-13).

Regarding claims 32-33, it would have been obvious to one of ordinary skill in the art to have incorporated 0.5-100g/l of aminosilane coupling agent as taught by JP'781 into the conversion coating solution of JP'295 in view of Nagashima since JP'781 teaches such a concentration range is best utilizes the effect of the silane coupling agent as taught by JP'781(translation: page 6 lines 10-13).

Regarding claims 37-38 and 41-42, the instant claims are rejected for the same reasons set forth in the rejection of claims 31 and 36 above.

**11. Claims 29, 31, 34-36, 39 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'295 in view of Affinito US 6,203,854 B1(Affinito).**

JP'295 teaches a process for coating an automobile part by electrodeposition wherein the automobile part is pretreated in with a corrosion inhibiting coating, and without drying, directed treated with an electrodeposition coating. JP'295 further teaches that the automobile part is a steel sheet(translation: page 3 lines 8-19).

However, JP'295 does not explicitly teach that corrosion inhibiting coating comprises the chemical conversion coating composition as claimed with claimed pH.

Affinito US 6,203,854 B1(Affinito) teaches a process for coating a metal surface with a conversion coating solution having a pH of less than about 5(col. 4 lines 10-14) and comprising about 0.2 to about 1wt% of aminosilane(col. 3 lines 63-65), such as aminopropyltrimethoxysilane, and about 0.1 to about 0.5wt% of fluorine-containing compound(col. 3 line 66 - col. 4 line 3), such as fluorotitanic, fluorozirconic and fluorohafnic acids(col. 3 lines 22-49). Although embodiments of Affinito uses aluminum, Affinito further teaches that its coating process can be applied on many different metal surfaces(col. 3 lines 13-14). The coating process of Affinito can be followed by an electrophoretic coating step(col. 5 lines 48-50).

Regarding claims 29, 31, 34-36, 39 and 48, it would have been obvious to one of ordinary skill in the art to have incorporated the conversion coating solution of Affinito into the corrosion inhibiting coating step of JP'295 in order to improve corrosion

Art Unit: 1733

protection and paint adhesion, and to improve the process efficiency as taught by Affinito (col. 2 lines 10-11, col. 2 lines 55-67).

In addition, the amounts of aminosilane, fluorine containing compound and the pH of the conversion coating solution of JP'295 in view of Affinito overlap the claimed aminosilane, fluorine containing compound concentration and the claimed pH.

Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed concentration and pH ranges from the disclosed range of JP'295 in view of Affinito would have been obvious to one skilled in the art since JP'295 in view of Affinito teach the same utilities in their disclosed concentration and pH ranges.

Regarding claim 47, Affinito further teaches rinsing the conversion coated substrate with water(col. 5 lines 2-3). Although Affinito does not explicitly teach that the water is ion exchange water as claimed, Affinito does teach that the conversion coating preferably uses ionized water(col. 4 lines 8-9). Therefore, one of ordinary skill in the art would have found it obvious to have washed the conversion coated surface of JP'295 in view of Affinito with ion exchange water, in order to remove excess coating material without introducing impurities or contaminants.

**12. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'295 in view of Affinito, and further in view of Shimakura.**

The teachings of JP'295 in view of Affinito are discussed in section 11 above. However, JP'295 in view of Affinito do not explicitly teach the claimed accelerator in the conversion coating solution.

Art Unit: 1733

Shimakura teaches an aminosilane coupling agent and Zr/Ti fluoride containing conversion coating solution that further comprises persulfates since persulfates contributes to corrosion resistance(paragraphs [0021, 0024]).

Regarding claim 30, it would have been obvious to one of ordinary skill in the art to have incorporated persulfates as taught by Shimakura into the conversion coating solution of JP'295 in view of Affinito in order to further improve corrosion resistance as taught by Shimakura.

**13. Claim 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'295 in view of Affinito, and further in view of Nagashima.**

The teachings of JP'295 in view of Affinito are discussed in section 11 above. However, JP'295 in view of Affinito do not explicitly teach the claimed metal ions.

Nagashima teaches a process for treating a metal surface with a conversion coating solution comprising a silane coupling agent, a fluoride compound of Zr/Ti, and metal ions such as Zr, Mg and Al(col. 4 lines 42-61, col. 5 lines 5-10 and 5-39). Nagashima further teaches that suitable silane coupling agent includes N-(aminoethyl) 3-aminopropyltrimethoxy silane (col. 5 lines 37-38). The pH of the conversion coating solution as taught by Nagashima is in a range of 2.0-6.5(col. 7 lines 37-44).

Regarding claims 44-46, Nagashima further teaches that its aminosilane coupling agent and Zr/Ti fluoride containing conversion coating solution also comprises metal ions such as Zn, Mg and Al(abstract). Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated metal ions such as Zn, Mg and Al as taught

Art Unit: 1733

by Nagashima into the conversion coating solution of JP'295 in view of Affinito in order to further improve corrosion resistance as taught by Nagashima(col. 4 lines 51-61).

***Response to Arguments***

14. The declaration under 37 CFR 1.132 filed 3 September 2010 is insufficient to overcome the rejections based upon JP'295 in view of Shimakura and Nagashima, JP'295 in view of Nagashima, JP'295 in view of Nagashima and Shimakura, and JP'295 in view of Nagashima and JP'781 as set forth in the last Office action because:

Applicant's arguments regarding Shimakura and Nagashima's coating not being conversion coatings are not substantiated with factual evidence data.

Regarding Shimakura, applicant argues that Shimakura does not necessitate the dissolution of the metal surface in forming the coating film and only enables coating formation of non-volatile components by heating/drying.

The examiner does not find applicant's argument convincing because dissolution of the metal surface is not positively recited in the instant claims, therefore, is not commensurate with the scope of the instantly claimed invention. Additionally, Shimakura teaches a conversion coating process that uses the same coating components with similar amounts as claimed. One of ordinary skill in the art would have expect the same coating to result from the coating process of Shimakura. Shimakura also specifically teaches that's coating process leads to formation of zirconium oxide on the metal surface. Therefore, the examiner concludes that the coating process by Shimakura deposits oxide of zirconium as recited in claim 29.

Art Unit: 1733

Furthermore, Shimakura teaches that the drying procedure can take place at room temperature for as little as 2 seconds(paragraph [0030]), which implies that sufficient coating layer would have formed during the coating process and/or immediately after the metal substrate is removed from the treatment solution. The drying time of at little as 2 seconds as taught by Shimakura also falls well within the range of time it would take for the treated metal substrate to be transferred for further processing. Therefore, the examiner concludes that the surface treatment process as taught by Shimakura is capable of forming a corrosion resistant coating layer without a subsequent drying step as claimed.

Regarding Nagashima, Applicant further argues that Nagashima's coating is formed after drying and does not form immediately. Nagashima's coating is a resin coating not a chemical conversion coating.

The examiner does not find applicant's invention convincing because Nagashima teaches reaction of dissolved metal ions and the water-soluble resin to form a resin coating(col. 8 lines 16-28). Since the coating as taught by Nagashima is a result of chemical reaction of the metal surface and the coating material, the examiner maintains that the coating produced by Nagashima is a chemical conversion coating. Additionally, the coating solution of Nagashima contains fluoro-acids of titanium, zirconium and/or hafnium as a major component. Therefore, the examiner concludes that the coating formed by Nagashima would have contained at least some oxide of titanium, zirconium and/or hafnium as claimed.

Art Unit: 1733

Additionally, applicant has not provided any factual evidence data demonstrating that the coatings formed by Shimakura and Nagashima do not contain hydroxide or oxide of zirconium, titanium and/or hafnium.

15. Applicant's arguments filed 3 September 2010 have been considered but they are not persuasive.

In the remarks, applicant argues that JP'295 does not teach that its pretreatment step is a chemical conversion coating step using the claimed Zr/Ti based composition.

The examiner acknowledges JP'295's lack of teaching of specific types of pretreatment composition. However, as also admitted by the applicant, JP'295 does teach that the pretreatment step is applied with the purpose of imparting corrosion resistance and to improve adhesion. Therefore, one of ordinary skill in the art would have found it obvious to incorporate any metal surface treatment process capable of imparting corrosion resistance and improving adhesion into the pretreatment step of JP'295 with expected success. Both Shimakura and Nagashima teach such processes.

Applicant further argues that Shimakura does not teach the claimed subsequent cationic electrodeposition step.

The examiner does not find applicant's argument convincing because the primary reference JP'295 already teach the claimed subsequent cationic electrodeposition step. Since JP'295 does not limit the types of pretreatment as long as the pretreatment step provides rust proofing or improves adhesion (page 3 of the translation, second paragraph from the bottom), and the coating process of Shimakura provides imparts high corrosion resistance to the treated surface which meets the requirement of

Art Unit: 1733

JP'295's pretreatment step. Therefore, one of ordinary skill in the art would have found it obvious to have incorporated the coating step of Shimakura into the pretreatment step of JP'295 with expected success.

Applicant further argues that Shimakura does not disclose using a steel plate as the metal substrate.

The examiner does not find applicant's argument convincing because it is not commensurate with the scope of the instant claims. Independent claims 29 recites a metal base material "comprises at least iron based material", which includes the Zn/Al coated steel surfaces of Shimakura. Instant claim 48 recites a metal base material "comprises a plurality of metal substrates selected from iron material, aluminum material and zinc material", which also includes the Zn/Al coated steel surfaces of Shimakura.

Applicant further argues that Shimakura teaches drying of the coating.

The examiner does not find applicant's argument convincing because Shimakura teaches that the drying procedure can take place at room temperature for as little as 2 seconds(paragraph [0030]), which implies that sufficient coating layer would have formed during the coating process and/or immediately after the metal substrate is removed from the treatment solution. The drying time of at little as 2 seconds as taught by Shimakura also falls well within the range of time it would take for the treated metal substrate to be transferred for further processing. Therefore, the examiner concludes that the surface treatment process as taught by Shimakura is capable of forming a corrosion resistant coating layer without a subsequent drying step as claimed.



Art Unit: 1733

Applicant further argues that Shimakura is an application type coating not a reaction type coating as claimed.

The examiner does not find applicant's argument convincing because Shimakura teaches formation of zirconium oxide coating on the metal surface(paragraph [0040]) which indicates the reaction type coating as claimed.

Applicant further argues that Nagashima also teaches drying after the coating process which differs from the present invention, and Nagashima does not teach subsequent cationic electrodeposition step.

The examiner does not find applicant's argument convincing because the coating solution as taught by Nagashima is substantially the same as claimed conversion coating solution comprising the same amino-group containing silane coupling agent, the same fluoride compound of Zr/Ti and the same metal ions such as Zr, Mg and Al. In addition, the coating solution of Nagashima has the same pH as claimed conversion coating solution and Nagashima also teaches that its coating solution produces coating with high corrosion resistance and adhesion. (see paragraph 8 above). Therefore, one of ordinary skill in the art would have found the same coating formation prior to the drying step of Nagashima as claimed. In addition, it would have been obvious to one of ordinary skill in the art to have incorporated coating step of Nagashima into the pretreatment step of JP'295 with expected success since Nagashima's coating step satisfies the requirement of JP'295's pretreatment step, which is to impact corrosion resistance and to improve subsequent paint adhesion.

In addition, the subsequent cationic electrodeposition step has been taught by the primary reference JP'295.

Furthermore, as admitted by the applicant(see page 8, third and fourth full paragraphs), it is well known in the metal surface treatment art that the cationic electrodeposition is a wet process. Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the metal surface treatment step of Nagashima into the pretreatment step of JP'295 without the drying step since the coating process would have gone from a wet pretreatment step to another wet cation electrodeposition step, and extra drying step would have seemed unnecessary and counter intuitive to one of ordinary skill in the art.

Lastly, utilizing heating/drying in a coating process is not an indication of non-reactive type of coating as evidenced by Affinito. Affinito's coating process may also include a drying step at an elevated temperature(page 5 lines 3-10). However, Affinito is coating is still a conversion coating(col. 6 line 46). Nagashima also acknowledges the occurrence of metal surface reaction(col. 7 lines 35-38). Therefore, the examiner maintains that the coating of Nagashima is a reaction type coating as claimed.

Applicant further argues that Nagashima's coating solution requires phenol resin as an essential component and it is used as a film forming material, which is different from the zirconium oxide coating of the instant invention.

The examiner does not find applicant's argument convincing because the instant dependent claim 29 uses open-ended transitional phrase "comprises" when describing the conversion coating agent, which implies that the claimed conversion coating agent

Art Unit: 1733

may contain significant amounts of other additional coating components that have not been explicitly recited in the claim. Therefore, the coating solution as claimed does not exclude the phenol resin in the coating solution of Nagashima. In addition, the coating solution of Nagashima comprises significant amount of Zr/Ti which would have resulted in a Zr/Ti oxide containing coating film as claimed.

Applicant further argues that Nagashima's reason for adjusting pH is different from the instant invention.

The examiner does not find applicant's argument convincing because it is not commensurate with the scope of the instant invention. The instant independent claim 29 recites "said chemical conversion coating agent has a pH of 1.5 to 6.5"(i.e. a product type limitation", not "adjusting pH to promote etching"(i.e. a process type limitation". Since the conversion coating solution of Nagashima has a pH of 2.0-6.5, it meets the limitation of claimed pH.

Applicant further argues that Nagashima teaches using a steel plate as the metal substrate.

The examiner does not find applicant's argument convincing because it is not commensurate with the scope of the instant claims. Independent claims 29 recites a metal base material "comprises at least iron based material", which includes the steel surface as well as other metal surfaces such as Zn plated steel and Al alloys of Nagashima. Instant claim 48 recites a metal base material "comprises a plurality of metal substrates selected from iron material, aluminum material and zinc material", which also includes steel, Zn plated steel and Al alloy surfaces of Nagashima.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lois Zheng/

Patent Examiner